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Inflow Thrombosis Does Not Adversely Affect Thrombolysis Outcomes of Symptomatic Iliofemoral Deep Venous Thrombosis

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Background: The presence of popliteal or tibial vein clot is thought to adversely affect thrombolysis for iliofemoral deep venous thrombosis (DVT). We examined the effect of inflow thrombosis on functional and anatomic outcomes.

Methods: A retrospective review of 44 patients treated for symptomatic iliofemoral DVT between 2006 and 2009 was performed. All patients were treated by pharmacomechanical thrombectomy with local tissue plasminogen activator with the Angiojet or Trellis device. Catheter-directed lysis and vena cava filters were used sparingly. Univariate and multivariate logistic regression analyses were used.

Results: Forty-four patients with a mean age of 52.1 ± 15.8 years presented with symptoms averaging 13.4 ± 9.9 days in duration. Twenty (45.4%) had symptoms for >14 days; 39% were treated in one session, but 27 patients required lytic infusion for residual thrombus. Iliac stenting was required in 49% of limbs. Successful lysis (>50%) was achieved in 91% of patients, and symptom resolution or improvement in 91%. All patients became ambulatory with no or minimal limitation. No major systemic bleeding complications occurred. Freedom from DVT recurrence and reintervention was 84% at 24 months by life-table analysis. On preoperative ultrasound imaging, 89% had popliteal and tibial clot and were treated by accessing a thrombosed popliteal vein. Only one patient required simultaneous tibial lysis. At a mean follow-up of 8.7 ± 6.3 months, 41 patients (93%) had no symptom recurrence (Fig), 82% had preserved valve function and no reflux on duplex imaging, with a mean CEAP class of 1.4. The presence of inflow thrombus had no adverse effect on symptom relief, treatment duration, patency, CEAP class, or valve reflux. Interestingly, 90% of patients with initial popliteal thrombus had a patent popliteal vein on postlysis ultrasound imaging, and the presence of tibial thrombus on presentation was predictive of symptom relief with thrombolysis (odds ratio, 13.03; 95% confidence interval, 1.02-165.58; $P = .048$).

Conclusions: Inflow thrombosis is common and does not preclude successful thrombolysis of iliofemoral DVT. Valve function is preserved on midterm follow-up with maintained CEAP class and symptom relief.

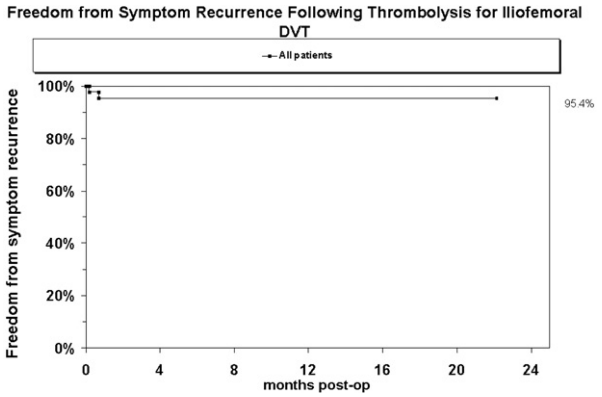

Fig. Freedom from symptom recurrence after thrombosis for iliofemoral DVT

Objective Outcome Measures of Patients with Iliofemoral Deep Venous Thrombosis Treated with Catheter-directed Thrombolysis

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Background: It has been suggested that elimination of thrombus in patients with iliofemoral deep venous thrombosis (DVT) may reduce the risk of the post-thrombotic syndrome (PTS). The purpose of this study was to provide objective follow-up in patients treated with pharmacomechanical thrombolysis or catheter-directed thrombolysis for extensive lower extremity DVT.

Methods: Patients with iliofemoral DVT who underwent catheter-directed or pharmacomechanical thrombolysis were monitored and assessed for signs and symptoms of PTS using validated outcome measures: the CEAP clinical classification, the Villalta score, and the Venous Clinical Severity Score (VCSS).

Results: Forty-eight patients underwent catheter-based treatment for iliofemoral DVT, 21 with catheter-directed thrombolysis and 27 with pharmacomechanical lysis. The average patient age was 46 years (range, 16-78 years). Mean percentage of clot lysis as determined by preprocedural and postprocedural venography was 76%. Follow-up averaged 21.3 months. Mean clinical class of CEAP and VCSS and Villalta scores were 2, 3, and 4, respectively. Complications of thrombolysis included one acute renal failure and two major hematomas. No intracranial bleeding or symptomatic pulmonary embolism occurred.

Conclusions: Patients with iliofemoral DVT who underwent catheter-based thrombolytic techniques to eliminate thrombus demonstrated good technical results based on the percentage of clot lysis. This resulted in overall good clinical scores based on the CEAP, VCSS, and Villalta validated scoring systems. PTS was avoided as defined by the Villalta score. These observations indicate a successful strategy of catheter-directed thrombolysis will likely prevent the development of PTS or substantially reduce its severity.

Anticoagulation Monitoring by an Anticoagulation Service is More Cost-effective than Routine Physician Care

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Background: Vitamin K antagonists (VKA) are the mainstay of long-term anticoagulation but require careful monitoring for effectiveness and safety. Most patients are treated by physicians, although anticoagulation services (AS) are becoming increasingly popular. A new AS run by nurses and overseen by a physician was established, and the insurance carrier independently assessed its effectiveness vs usual physician care. We report the independent analysis of anticoagulation morbidity reflected by emergency department (ED) visits and hospitalizations observed by these two paradigms of VKA monitoring.

Methods: An independent analysis of ED visits and hospitalizations as a consequence of anticoagulation was performed for 2397 patients receiving VKA between July 1 and December 31, 2008. Physicians monitored 2266 patients and the newly formed AS monitored 133. The average cost of ED visits and hospitalizations was calculated for each patient cohort. The expense of each was amortized for 12 months to determine an annual cost of anticoagulation morbidity per 100 patients treated.

Results: Results are summarized in the Table.

Table. Six-month data for emergency department visits and hospitalizations related to anticoagulation

	Monitoring service		
Variable	*MD*	*AS*	*Total*
Patients evaluated, No. (%)	2266 (94.5)	131 (5.5)	2397
Emergency department data			
Visits, No. (%)	247 (10.9)	2 (1.5)	249 (12.4)
Cost per visit	$288.00	$139.00	
Cost per patient treated	$31.00	$2.00	
Savings per patient treated by AS			$29.00
Annual savings/100 patients treated			$5800.00
Hospitalization data			